

Appl. No. 10/537,959  
Amdt. Dated May 24, 2010  
Reply to Office Action of November 23, 2009

Attorney Docket No. 1001.103  
Customer No.: 95674

### **REMARKS**

This application has been carefully reviewed in light of the Final Office Action dated November 23, 2009. Claims 12 to 15 remain in this application. Claim 12 is the independent Claim. It is believed that no new matter is involved in the arguments presented herein.

Reconsideration and entrance of the amendment in the application are respectfully requested.

### **Interview Summary**

Applicant thanks the Examiner for the courtesy of the telephone interviews conducted on May 13 and May 14, 2010. The substance of the arguments presented by the Applicant and the issues raised by the Examiner during the interviews are incorporated in this response.

Applicant respectfully submits that, as discussed during the May 14, interview, the claims presented in the instant application are in condition for allowance.

### **Art-Based Rejections**

Claims 12-14 were rejected under 35 U.S.C. § 103(a) over U.S. Patent No. 4,806,422 (Ohno); Claim 15 was rejected under § 103(a) over Ohno in view of U.S. Patent No. 6,461,722 (Kitel); Claims 12-15 were rejected under §103(a) over U.S. Patent Application Publication No. 2001/0013425 (Rokugawa); Claims 12 and 14-15 were rejected under § 103(a) over U.S. Patent Application Publication No. 2002/0054991 (Shibuya).

Applicant respectfully traverses the rejections and submits that the claims herein are patentable in light of the arguments below.

**The Ohno Reference**

The applied Ohno reference is directed to a thermal transfer printing film. (*See, Ohno, Abstract*). Ohno teaches a surface that is as flat as possible to allow for optimal head conduction. (*See, id., Col. 3, lines 10-18*).

**The Kitel Reference**

The applied Kitel reference is directed to a thermal transfer laminate for providing pictorial and/or print designs. (*See, Kitel, Abstract; Col. 1, lines 6-9*).

**The Rokugawa Reference**

The applied Rokugawa reference is directed to a substrate of multilayered structure having a plurality of sets of an insulation layer and a wiring line layer for a semiconductor device (*See, Rokugawa, Abstract; [0001]*).

**The Shibuya Reference**

The applied Shibuya reference is directed to a thermoplastic resin film having on a surface thereof a hydroxy-modified imine polymer. (*See, Shibuya, Abstract; [0001]*).

**The Claims are Patentable Over the Cited References**

The present application is generally directed to a thermoplastic polyimide resin film.

As defined by independent Claim 12, a resin film includes a thermoplastic polyimide resin having a surface shape formed on at least one of the surfaces thereof. The surface shape has a Ra1 value of arithmetic mean roughness of 0.05  $\mu\text{m}$  to 1  $\mu\text{m}$  measured with a cutoff value of 0.002 mm, and a Ra1/Ra2 ratio of 0.4 to 1 and a Ra2 value measured with a cutoff value of 0.1 mm.

The applied references do not disclose or suggest the above features of the present invention as defined by independent Claim 12. In particular, the applied references do not disclose, teach or even suggest, “a resin film comprising a thermoplastic polyimide resin having a surface shape formed on at least one of the surfaces thereof, the surface shape having a Ra1 value of arithmetic mean roughness of 0.05  $\mu\text{m}$  to 1  $\mu\text{m}$  measured with a cutoff value of 0.002 mm, and a Ra1/Ra2 ratio of 0.4 to 1, Ra2 being a value measured with a cutoff value of 0.1 mm,” as required by independent Claim 12 of the present invention.

The Office Action concedes that the applied Ohno reference does not disclose the claimed cut off value (for Ra1) of 0.002mm, but contends that the difference between the disclosed and claimed cut off values is due to the fact that Ohno uses Standard Procedure JIS B-0601 to measure cut off value, whereas Applicant’s invention does not. (*See, Office Action, Page 2*). However, as clearly stated in [0143] of the present Application, “Ra is defined in JIS B0601” and “the term ‘cutoff value’ represents the wavelength determined for obtaining a roughness curve from a sectional curve (observed data) according to JIS B0601.”

The Office Action similarly concedes that Ohno does not disclose the claimed Ra1/Ra2 ration of 0.4 to 1, but contends that “Ohno teaches that film thickness of the stick-preventing film is within the range of 2-12  $\mu\text{m}$ . Therefore, R2 value is expected to be within the claimed values.” (*See, Office Action, Page 3.*)

The Office Action repeats this argument respect to the teachings of the Rokogawa reference, contending

Regarding the limitation of measured with a cutoff value of 0.002  $\mu\text{m}$ , and a Ra1/Ra2 ratio of 0.4 to 1, Ra2 being a value measured with a cutoff value of 0.1 mm, the position is taken

that Rokugawa teaches thin films (microns). Cut off values claimed are comparable with thickness of the film. Therefore, this limitation is achieved in Rokugawa's laminate with great expectation of success. (*See, Office Action, Page 5-6*).

With respect to the applied Shibuya reference, the Office Action similarly contends:

Regarding the limitation of measured with a cutoff value of 0.002  $\mu\text{m}$ , and a Ra1/Ra2 ratio of 0.4 to 1, Ra2 being a value measured with a cutoff value of 0.1 mm, the position is taken that Shibuya teaches thin films (microns). Cut off values claimed are comparable with thickness of the film. Therefore, this limitation is achieved in Shibuya's laminate with great expectation of success. (*See, Office Action, Page 6*)

Applicant respectfully points out that according to the present invention the cut off value is unrelated to film thickness. For the Examiner's convenience, Applicant concurrently provides a "Hand Drawing" in order to clarify certain aspects of the present invention with respect to the claimed Ra1 and Ra2 and the cut off values thereof. The top graph in the Hand Drawing shows the cut off of wavelengths of over 100  $\mu\text{m}$ .

The meaning of cut off value in the present invention is explained in [0143] of the present Patent Application Publication, according to which

In the present invention, the term "cutoff value" represents the wavelength determined for obtaining a roughness curve from a sectional curve (observed data) according to JIS B0601.

Namely, the Ra value measured with a cutoff value of 0.002

mm means an arithmetic mean roughness calculated from a roughness curve, which is obtained by removing irregularity with wavelengths of 0.002 mm or more from the observed data

The claimed Ra2, which is measured with a cutoff value of 100  $\mu\text{m}$ , therefore indicates irregularity with wavelengths of 100  $\mu\text{m}$  or less. As one of ordinary skill in the art would readily appreciate, the claimed cut-off value is not related to the “peaks or valleys” of the formed irregularity. As such, it is irrelevant to the thickness of the film.

The present invention is based on a finding by the inventors of an optimal surface shape on a film surface that is defined by the values of Ra1, Ra2 and Ra1/Ra2 measured with specific cut off values. As explained in [0148] of the present Patent Application Publication,

The Ra2 value indicates irregularity with wavelengths of 100  $\mu\text{m}$  or less. Since the irregularity with wavelengths of over 100  $\mu\text{m}$  possibly includes, at a high ratio, wrinkles and curls occurring in a film at the time of setting of a sample for observing the surface shape, the Ra2 value is set as a value suitable for removing irregularity which is not original irregularity of the film. On the other hand, the Ra1 value indicates irregularity with wavelengths 2  $\mu\text{m}$  or less. The inventors found that as the Ra1 value increases, wiring formability in forming micro-wiring with L/S of 30  $\mu\text{m}$  /30  $\mu\text{m}$  or less and preferably 10  $\mu\text{m}$  /10  $\mu\text{m}$  or less tends to decrease. It was also found that irregularity with wavelengths of 2  $\mu\text{m}$  or less tends to have lower adhesiveness unless it has a certain height, i.e., an arithmetic mean roughness value is 0.05  $\mu\text{m}$  to 1  $\mu\text{m}$ .

As noted above, the attached Hand Drawing is provided for the Examiner's convenience, to further clarify aspects of the claimed invention with respect to Ra1 and Ra2 and the claimed cut off values for measuring them.

Therefore, the claimed invention defines a surface shape of the claimed film by reference to the values of Ra1, Ra2, measured with specific cut off values, , as well as their ratio Ra1/Ra2, a definition that the applied references simply do not disclose, teach or even suggest.

Accordingly, neither Ohno, Rokugawa or Shibuya disclose, teach or even suggest, "a resin film comprising a thermoplastic polyimide resin having a surface shape formed on at least one of the surfaces thereof, the surface shape having a Ra1 value of arithmetic mean roughness of 0.05  $\mu$ m to 1  $\mu$ m measured with a cutoff value of 0.002 mm, and a Ra1/Ra2 ratio of 0.4 to I, Ra2 being a value measured with a cutoff value of 0.1 mm," as required by independent Claim 12 of the present invention.

The ancillary Kitel reference is not seen to remedy the above noted deficiencies of Ohno, Rokugawa or Shibuya.

Since the applied references do not disclose or suggest the above features as recited in independent Claim 12, those references cannot be said to anticipate nor render obvious the invention which is the subject matter of that claim.

Accordingly, independent Claim 12 is believed to be in condition for allowance and such allowance is respectfully requested.

The remaining claims depend either directly or indirectly from independent Claim 12 and recite additional features of the invention which are neither disclosed

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nor fairly suggested by the applied references and are therefore also believed to be in condition for allowance and such allowance is respectfully requested.

**Conclusion**

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Reexamination and reconsideration of the application, as amended, are requested.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los Angeles, California telephone number (213) 223-2365 to discuss the steps necessary for placing the application in condition for allowance.

If there are any fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-5225.

Respectfully submitted,  
ADLI LAW GROUP P.C.

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By: /s/Darius G. Adli  
Darius G. Adli  
Registration No. 51,386  
Attorney for Applicant(s)

633 West Fifth Street, Suite 2600  
Los Angeles, California 90071  
Phone: 213-223-2365  
Fax: 213-223-2365  
Email: [ip@adlilaw.com](mailto:ip@adlilaw.com)  
[www.adlilaw.com](http://www.adlilaw.com)

